HDFA100BA80/160 Three Phase Diode & Thyristor

Feature

- This module is designed very compactly,Because diode Module and thyristor are put together.
- This module is also isolated type between electorode Terminal and mounting base.

I_D	100A	
V_{RRM}	800/1600V	
I_{FSM}	1.19/1.2	KA
I^2t	7030	A^2S

Typical application

- Inverter for AC or DC motor control
- Current stabilized power supply
- Switching power supply

● DIODE

■ Maximum Ratings

(T_J=25℃)

Symbol	ltem	Ratings		Unit
		HDFA100BA80	HDFA100BA160	
V_{RRM}	Repetitive Peak Reverse Voltage	800	1600	V
V_{RSM}	Non-Repetitive Peak Reverse Voltage	960	1700	V

Symbol	ltem	Conditions	Ratings	Unit
I_D	Output Current (D.C.)	Three phase full wave, T_C=117℃	100	A
I_{FSM}	Surge forward current	50/60Hz,peak value, non-repetitive	1186/1300	A
T_J	Operating Junction Temperaturea		-40 to +150	℃
T_{stq}	Storage Temperature		-40 to +125	℃
V_{iso}	Isolation Breakdown Voltage (R.M.S.)	R.M.S,t=1min,$I_{iso:}$1mA(max)	2500	V
F_M	Mounting（M5)		2.7	N-m
W_t	Mass		150	g

■ Electrical Characteristics

Symbol	ltem	Conditions	Ratings	Unit
I_{RRM}	Repetitive Peak Reverse Current,max.	T_J=150℃,V_{RM}=V_{RRM}	12	mA
V_{FM}	Forward Voltage Drop,max.	T_J=25℃， IF=50A	1.30	V
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case (TOTAL)	0.20	℃/W
$R_{th(c-f)}$	Thermal Impedance, max.	Case to Fin	0.10	℃/W

● THYRISTOR

■ Maximum Ratings

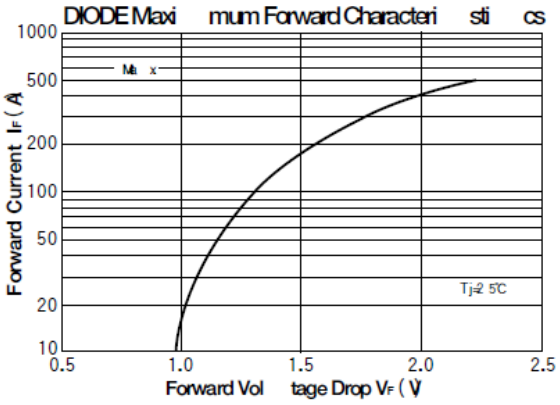
(T_J=25℃)

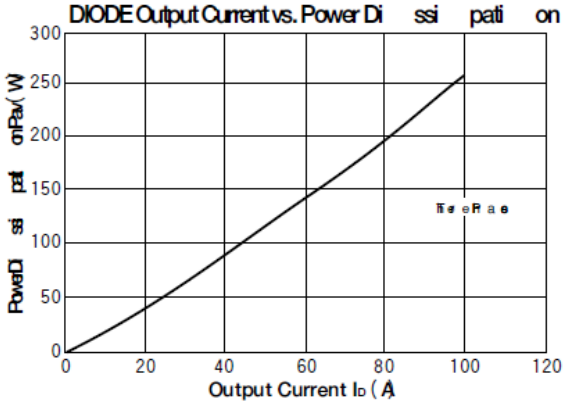
Symbol	Item	Ratings		Unit
		HDFA100BA80	HDFA100BA160	
V_{RRM}	Repetitive Peak Reverse Voltage	800	1600	V
V_{RSM}	Non-Repetitive Peak Reverse Voltage	960	1700	V
V_{DRM}	Repetitive Peak off-State Voltage	800	1600	V

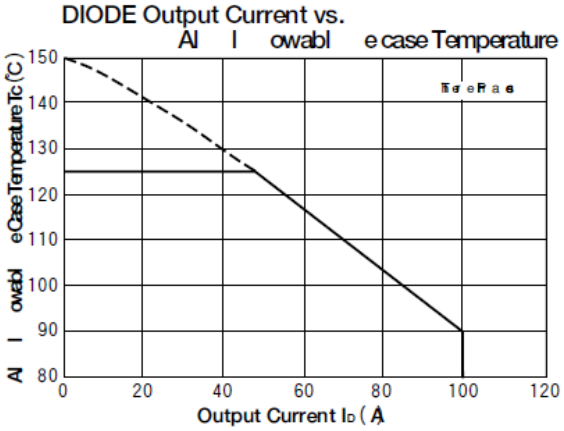
Symbol	Item	Conditions	Ratings	Unit
$I_{T(AV)}$	Average On-State Current	Singl phase half wave.180° conduction，T_C=85℃	100	A
I_{TSM}	Surge On-State Current	peak value, non-repetitive，50/60Hz	1186/1300	A
I^2t	I^2t		7030	A^2S
di/dt	Critical Rate of Rise of On-State Current	I_G=100mA ，V_D=1/2V_{DRM}	150	A/us
V_{iso}	Isolation Breakdown Voltage (R.M.S.)	R.M.S,t=1min,$I_{iso:}$1mA(max)	2500	V
T_J	Operating Junction Temperature		-40 to +135	℃
T_{stq}	Storage Temperature		-40 to +125	℃
F_M	Mounting（M5)		2.7	N-m
W_t	Mass		150	g

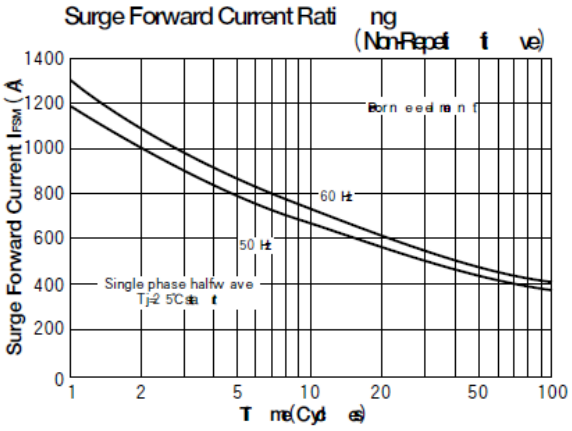
■ **Electrical Characteristics**

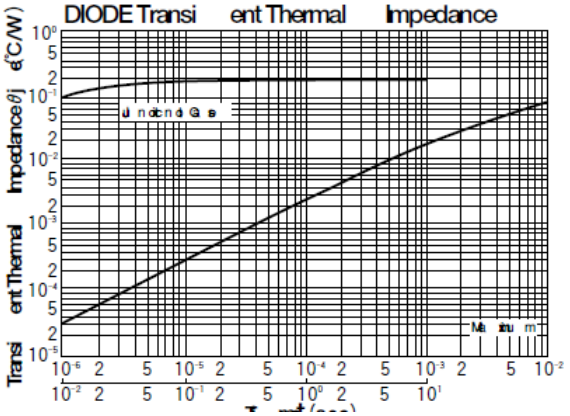
I_{DRM}	Repetitive Peak Off-State Current,max	T_J=135℃,V_D=V_{DRM}	70	mA
I_{RRM}	Repetitive Peak Reverse Current,max.	T_J=135℃,V_D=V_{RRM}	70	mA
V_{TM}	Peak On-State Voltage,max	T_J=125℃,I_{TM}=50A	1.20	V
I_{GT}	Gate Trigger Current,max	V_D=6V,I_A=1A	70	mA
V_{GT}	Gate Trigger Voltage,max.		3	V
dv/dt	Critical Rate of Rise of Off-State Voltage,min.	T_J=125℃,V_{DM}=0.67V_{DRM}	500	**V/us**
$R_{th(j-c)}$	Thermal Impedance, max.	Junction to Case	0.36	℃/W
$R_{th(c-f)}$	Thermal Impedance, max.	Case to Fin	0.10	℃/W

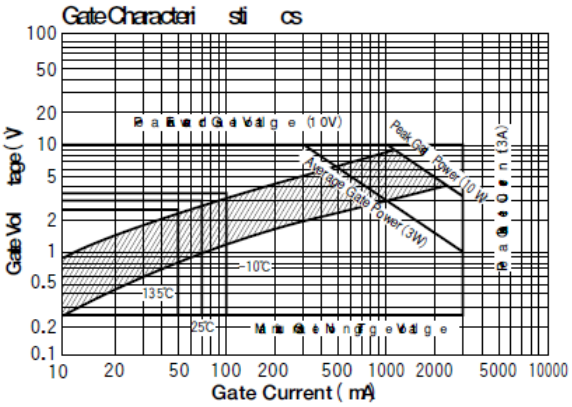

DIODE Maximum Forward Characteristics
Max
Tj=25℃
Forward Current IF (A)
Forward Voltage Drop VF (V)

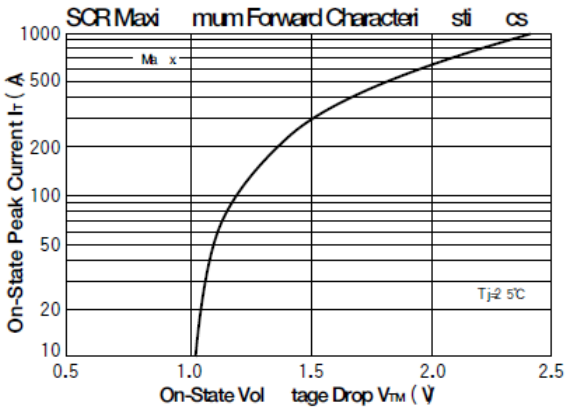

DIODE Output Current vs. Power Dissipation
Three Phase
Power Dissipation (W)
Output Current ID (A)

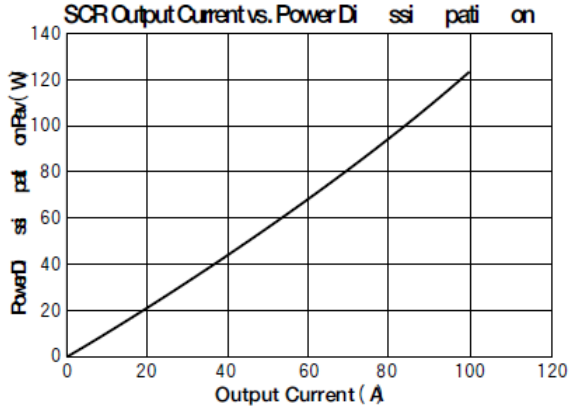

DIODE Output Current vs.
Allowable case Temperature
Three Phase
Allowable case Temperature Tc (℃)
Output Current ID (A)


Surge Forward Current Rating
(Non-Repetitive)
Per one element
60 Hz
50 Hz
Single phase half wave
Tj=25℃ start
Surge Forward Current IFSM (A)
Time (Cycles)


DIODE Transient Thermal Impedance
Junction to Case
Maximum
Transient Thermal Impedance θj-c (℃/W)


Gate Characteristics
Rated Gate Voltage (10V)
Peak Gate Power (10 W)
Average Gate Power (3W)
Rated Gate Current (3A)
-10℃
135℃
25℃
Maximum Gate Non-Trigger Voltage
Gate Voltage (V)
Gate Current (mA)


SCR Maximum Forward Characteristics
Max
Tj=25℃
On-State Peak Current IT (A)
On-State Voltage Drop VTM (V)


SCR Output Current vs. Power Dissipation
Power Dissipation (W)
Output Current (A)

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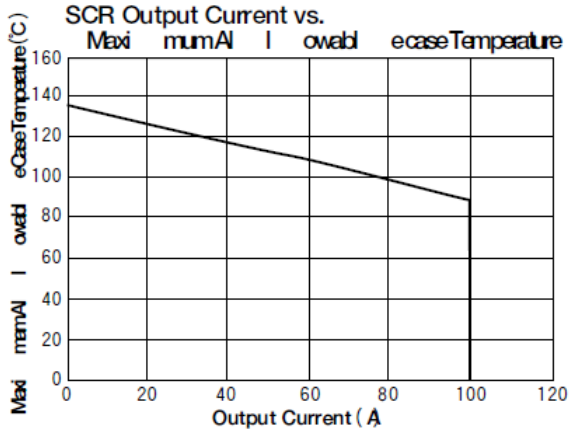
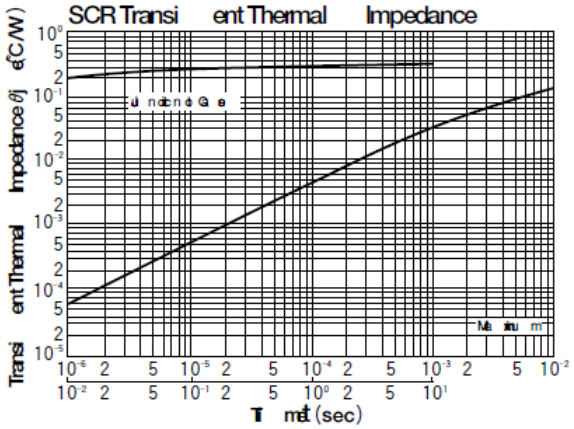
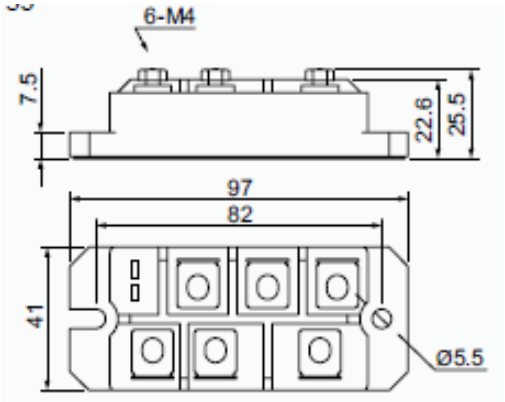




Outline:



Circuit Drawing: